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PRIMATES AND PANGOLINS FROM THE ASIATIC EXPEDITIONS[1]

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In their natural distribution, the species of primates occurring in China are confined to the southern half of that country south of the latitude of about 30° north. Nevertheless, as in the Moupin district of Szechwan, they may attain a considerable altitude in the mountains, though perhaps this may be affected by the seasonal temperature. The pangolins are also essentially southern, but in their case, it seems highly probable that their northward range must be in large part dependent upon the presence or absence of the species of termites upon which they depend for food. Of the primates secured by the Asiatic Expeditions, the excellent series of rhesus monkeys shows that but a single species occurs across southern China, in spite of various names applied by writers down to the time of Elliot. The status of several of the described races of stump-tailed macaque is also open to question, though adequate material for a final opinion is not yet available. The hoolock gibbon is now definitely added to the Chinese fauna as well as a third species of langur. Of the rare snub-nosed monkey, no specimens were secured.

PRIMATES

Macaca mulatta (Zimmermann)

Cercopithecus mulatta ZIMMERMANN, 1780, 'Geogr. Gesch. d. Mensch.,' II, p. 195.

Hinton and Wroughton (1921) have lately shown that the name *rhesus*, by which the rhesus monkeys had so long been known, is antedated by *mulatta* of Zimmermann, based on Pennant's tawny monkey of India. Except for a doubtfully distinct race, *villosa*, from Kashmir, there is currently believed to be but the single typical form in India, so that three skins from Teng-yueh, western Yunnan, secured by Dr. R. C. Andrews, may be regarded as the same. These, in somewhat worn pelage of late April, are ochraceous olive on the head, with a tuft of black hairs on the forehead between the eyes. Posteriorly the ochraceous ele-

[1]Publications of the Asiatic Expeditions of The American Museum of Natural History. Contribution No. 100.

ment increases in intensity, pale across the shoulders, brighter to nearly fulvous on the lower back and oustide of thighs, the fur everywhere with long gray bases, especially prominent on the long hair of the shoulders; the feet and lower limbs are drab gray, with faint ochraceous wash. The lower surface is pale grayish white. Tail about half the length of the trunk, colored above like the back, buffy gray below.

This monkey occurs across China from Yunnan and southern Szechwan to the coast near Shanghai, and thence south to Hainan and Cochin China. There is also an isolated colony in the former hunting park of Eastern Tombs, east of Peking in Chihli Province, on a specimen from which Milne-Edwards, in 1870, based the name *Macacus tcheliensis*, supposing it to have a shorter tail than the rhesus of India. Six specimens, mostly immature, from this locality were secured by the Asiatic Expeditions, and a careful comparison reveals no character by which they may be certainly distinguished from those of southern China. Obviously this colony must be regarded as derived from individuals introduced, no doubt many years ago, for the Chinese frequently keep this species in captivity. Elliot places the name as a synonym of Gray's *Macacus lasiotus*, said to have come from Szechwan. A skin in the Museum of Comparative Zoölogy from Nachukar, western Szechwan, at 10,000 feet, should represent this latter, but it is indistinguishable, even in length of hair, from other South-China individuals representing *mulatta*, nor does Milne-Edwards's *Macacus vestitus* from southeastern Tibet appear to be different, except possibly in slightly longer pelage.

The collections of The American Museum of Natural History further include a small series of these monkeys from Kuatun, Fukien Province, and others from the island of Hainan, which again show no points of difference in comparison with rhesus monkeys from western China. Thomas also has referred Indo-Chinese specimens to typical *mulatta*. It follows that Swinhoe's *Inuus sancti-johannis*, based on a very young rhesus in alcohol from a small island near Hongkong, as well as Elliot's *Pithecus littoralis* from Kuatun, are likewise synonyms of *mulatta*. Elliot also named as a distinct species, *Pithecus brachyurus*, the rhesus of Hainan, later changing the specific name to *brevicaudus*, since he regarded *brachyurus* as preoccupied by Temminck's *Macacus brachyurus* for the pig-tailed macaque. The distinctions he drew were made between two male skulls, one from India, the other from Hainan, but these do not seem to be more than individual or age peculiarities, for in the series from Hainan, secured by Mr. Clifford Pope, I can find no reliable points of difference in comparison with other individuals from the mainland. In a

series of wild-killed specimens, there is a very great amount of cranial variation, partly of age, partly of sex, and in part individual. The skulls of young animals have very short snouts, giving a facial angle of nearly 70°, and the forehead rises well above the eyebrow ridges when viewed from the front. With increasing age, the rostrum becomes longer and there is a distinct forward displacement of the teeth, so that whereas in a young one with only the two premolars in place the second is directly below the anterior root of the zygoma, in a skull with two molars erupted, the FIRST of these occupies that position, and in an old animal, the SECOND molar is directly below the zygomatic root, and the facial angle is only 45°. The increasing boniness of the eyebrow ridges results in a gradual flattening of the dorsal outline of the skull as seen from in front, changing the evenly rounded arc to a slight upward bulge, with but little of the top of the skull appearing above the ridges.

Macaca assamensis (McClelland)

Macacus assamensis McCLELLAND, 1839, Proc. Zoöl. Soc. London, p. 148.

A monkey with the general appearance of a rhesus, but lacking the yellow and orange tones of color; instead, it is a nearly uniform yellowish brown above, gray below.

Hinton and Wroughton (1921) have shown that this is a species distinct from *M. mulatta*, with a somewhat restricted distribution in northeastern India and the extreme southwest of China. Anderson, in his 'Zoological Researches' (1879), long ago found it on the Yunnan border. Two specimens were secured by Dr. R. C. Andrews on the Namting River, western Yunnan, in March, 1917.

Lyssodes speciosus melli (Matschie)

Macacus (*Magus*) *arctoides melli* MATSCHIE, 1912, Sitzungsb. Ges. Naturf. Freunde, Berlin, p. 308.

The stump-tailed macaques of southeastern Asia, ranging from Tenasserim and Upper Burma to Cochin China and Fukien Province, obviously comprise a single specific type to which many names have been applied, the oldest of which, as shown by Elliot, in 1912, is *Macacus speciosus* of F. Cuvier, based on a drawing by Duvaucel, whose subject is conjectured to have come from somewhere in the area mentioned. The animal of Tenasserim appears to be a brightly colored race, with the outer side of the limbs reddish, *rufescens* of Anderson; while from the mountains between Cambodia and Siam, Trouessart in 1892 described *Macacus harmandi*, which, as Elliot suspects, is probably a synonym of

speciosus. In 1870, Milne-Edwards described a representative of this macaque from the mountainous district of Moupin, in Szechwan, giving it the name *Macacus thibetanus*. He mentions its dark grayish-brown color, non-annulated hairs, the flesh-colored face and hands, while his plate shows a slightly golden-brown forehead, and gray cheeks. In the lack of typical specimens for comparison, it may stand as a subspecies of *speciosus*. More recently, Pocock had advocated the generic distinctness of the stump-tailed macaques including the Japanese *fuscatus*, in part on important differences in the glans penis.

Finally, both Matschie, in 1912, and A. B. Howell, in 1928, have applied new names to the dark chocolate-brown animal of southeastern China, which again may not be very different from true *speciosus*. Matschie had two specimens, both males, sent from Canton by Mell to the Berlin Zoölogical Gardens. They were secured in the mountains west of Lo-chang-ho, near the western border of Kwangtung Province. The face may be either red or flesh-colored, and though both types occur together, Matschie proposed to regard them as two distinct species, naming the one *melli*, the other *esau*, the former of which should be used as the valid name for this race.

The Third Asiatic Expedition secured five specimens in northwestern Fukien, near Kuatun, the type-locality of *Pithecus pullus* Howell (undoubtedly a synonym of *melli*). They are nearly uniform chocolate brown on head, body and limbs, paler below and on the sides of the head. The hair radiates from a central spot or line on the crown.

Pithecus obscurus barbei (Blyth)

Presbytis barbei Blyth, 1847, Journ. Asiatic Soc. Bengal, XVI, p. 734.

A beautiful series of eleven adults and two young "leaf monkeys" is tentatively referred to Blyth's *barbei*, here regarded as a subspecies of the darker *obscurus* of Siam, of which it is obviously a close relative. All the specimens are from extreme southwestern Yunnan, three from Homushu Pass, the others from the Namting River. The adults of both sexes are alike, of a general silvery gray with blackish face and forehead, and blackish-brown feet. Across the forehead the long black hairs stand stiffly erect; those of the sides and crown of the head do not form a crest but are directed backward. The color becomes drab-gray on the crown, paler buffy gray on the nape, and silvery gray on the back, flanks, and upper parts of the limbs and the tail, faintly washed across the shoulders with pale buff; the greater part of the forearm and the hands and feet are contrastingly dark, almost blackish; chin and a few hairs on upper

lip medially, whitish; lower surface of body and upper arms pale silvery gray; tail silvery gray darkening slightly at the tip; face covered with short, scattered, black hairs. Individuals show some slight variation in the amount of buffy wash over the upper back.

A very young specimen taken on March 6 is entirely fulvous, except the tail which is slightly darkened with dusky hairs. A somewhat older animal, hardly larger, has lost this youthful coat and is uniform dusky gray with blackish feet, except that the tail still retains a considerable fulvous tinge.

Though obviously a member of the *obscurus* group, with crestless head, generally dark-gray body, and blackish feet, and having a fulvous coat in the baby stage, it is nevertheless somewhat uncertain which of the various published names should be applied to this monkey; but, in the absence of comparable material, I am referring it to *barbei*, originally named from the Tippera Hills, eastern India (not from Tenasserim, as Anderson showed), with the description of which it seems to agree closely. Possibly, however, it should be called *crepusculus* Elliot, the name which Thomas has used for specimens from Annam and Cambodia. The type-locality of the latter is Mt. Muleyit in Tenasserim, a district which Elliot also includes in the range of *obscurus*, whose type-locality seems to be not definitely known. Nor do the descriptions of *P. germaini*, *phayrei*, *margaritæ*, and *shanicus* read essentially different. *P. melamera* Elliot, type-locality Bhamo, Burma, is said to differ by having the legs uniformly sooty. Anderson, in 1879, recorded *barbei* from the Kakyen Hills, northeastern Burma, but the present seems to be the first definite record for China. One other species, *P. françoisi*, is recorded from Kwangsi Province, black with a white temporal band; while in Hainan occurs *Pygathrix nemæus*, now regarded as generically separate from *Pithecus*.

Hylobates hoolock (Harlan)

Simia hoolock HARLAN, 1834, Trans. Amer. Phil. Soc., N. S., IV, p. 52.

In his recent review of the gibbons, Pocock (Proc. Zoöl. Soc. London, 927, p. 719) reduces the many nominal species to but three, of which two, *H. lar* of Lower Burma and Siam, and *H. hoolock* of Assam and Upper Burma, are obviously close relatives, while the third, *H. concolor* of Tonkin and Hainan, differs not only in lacking a pale eyebrow-band in the black phase, but in having an extremely long clitoris.

The known northeastern range of *H. hoolock* is now, apparently for the first time, extended into western Yunnan, through the capture of

six specimens on the Namting River and at Homushu Pass, by Dr. R. C. Andrews as already recounted by him. The series shows the usual sexual dichromatism, for the two males are blackish brown, more nearly dark brown on the chest and across the shoulders, and have the usual whitish eyebrow-band which is narrowly interrupted by dark blackish brown between the eyes. The remaining specimens are marked females (except one, no doubt erroneously labelled a male), and are contrastingly pale in color. The hair of the face and encircling it is nearly clear white with a few stiff black hairs over the eyes; and the chin, hands, feet, and upper chest are also white. The rest of the body is soiled white, tinged with pale brown. One of the specimens, however, is much darker, nearly uniform drab-brown on body and limbs, with pale head and neck. Possibly the hoolock goes through changes similar to those of *H. concolor* and its races, in which, as reported by Delacour, both sexes are "yellow" in babyhood, soon turning black, in which state the male remains, while the adult female becomes pale again.

NOMARTHRA

Manis pentadactyla dalmanni Sundevall

Manis dalmanni SUNDEVALL, 1843, Kongl. Vet.-Acad. Handl., 1842, XIII, p. 278, Pl. IV, fig. 10.

The Chinese pangolin differs from the two species of eastern and southern India in its well-developed external ear, and in various other characters of size, color, proportions, and average scale-count, as reviewed by Pocock (Proc. Zoöl. Soc. London, 1924, p. 707). Thomas has shown that the type-locality of Linnæus' *M. pentadactyla* must be regarded as Formosa, whence Bontius in 1658 described and figured a specimen that afterwards became the basis of this name. In 1749, Dalmann published a good account of the Formosan pangolin, and its habits. He appears to have had two specimens, one of which he kept alive for a time. Nearly a century later, Sundevall named the mainland form of the eastern pangolin *Manis dalmanni*, giving as its habitat "China, prope Canton." He had but three specimens for study: a skin with rostrum, in the Stockholm Museum, which was apparently without label, for he says the specimen was seemingly the one forming the subject of Dalmann's account; a second specimen of unknown origin in the Copenhagen Museum; and a third in the Paris Museum obtained a few years before from China. It seems likely that this last was the only one with a definite locality, and in view of Sundevall's express statement that the name *dalmanni* applies to the mainland form, near Canton, it seems in-

admissible to make it a synonym of the Formosan *pentadactyla*, as Matschie has done in erecting the new name *kreyenbergi* (type-locality, Nanking) for the South China animal. The latter, according to Swinhoe, is constantly smaller than the typical form from the island of Formosa, so that in lack of evidence to the contrary it may be tentatively regarded as a distinct race. It is certainly much smaller of body and skull than the Hainan pangolin, as shown by the excellent series from that island secured by Mr. Clifford H. Pope. Fukien skulls average about 74 mm. in basal length against 82 for the Hainan series. The differences in scale-counts between island and mainland specimens pointed out by Matschie prove to be matters of individual variation. In adult skulls the zygomatic processes of maxillary and squamosal frequently unite by prolongation of their tips, but in a few specimens by the ossification of a distinct small bone, which may represent the jugal or a connecting ossified cartilage.

Manis pentadactyla pusilla J. A. Allen

Manis pusilla J. A. Allen, 1906, Bull. Amer. Mus. Nat. Hist., XVIII, p. 465.

This island race was characterized on the basis of three specimens, only one of which was old, from Hainan. While it is said to be "very small," no direct comparison appears to have been made with specimens of the Formosan or mainland races. In the fine series secured from Hainan by Mr. C. H. Pope, however, there are eight adult skulls, which not only average larger than the Fukien series, but have longer tubular palates, with wider interpterygoid fossæ. They seem to be about equal in size to the Burmese skull figured by Anderson, but may for the present be regarded as representing a distinct animal.